

CLAIMS:

1. A method for preparing a human or animal tissue from at least one sheet of living tissue, the method comprising the steps of:

5 (a) arranging said at least one sheet of living tissue to form a multi-layer stack of living tissue; and

(b) applying a compressive force in a direction normal to the surface of the multi-layer stack of living tissue with a force-applying means at a pressure and for an amount of time  
10 sufficient to compress layers of tissue together for inducing adjacent layers of tissue to fuse or adhere to each other.

2. The method of claim 1, wherein said multi-layer stack is arranged on a substantially flat support.

3. The method of claim 1 or claim 2, wherein said multi-  
15 layer stack of living tissue in step (a) is formed by superimposing two or more sheets of living tissue.

4. The method of any one of claims 1 to 3, wherein said multi-layer stack of living tissue is formed by folding a sheet of living tissue upon itself.

20 5. The method of any one of claims 1 to 4, further comprising a step of anchoring said multi-layer stack of living tissue with anchoring means before said step (b) of applying a force, wherein said anchoring means applies sufficient tension across said multi-layer stack of living tissue to prevent  
25 shrinkage and/or maintain cellular differentiation and/or induce fiber orientation.

6. The method of claim 5, wherein said anchoring means comprises a multiplicity of spaced apart weights or ingots arranged substantially around the perimeter of said multi-layer  
30 stack of living tissue.

7. The method of any one of claims 1 to 6, wherein said force-applying means in step (b) comprises a weighted device suitable for applying substantially evenly-distributed pressure to said multi-layer stack of living tissue, said weighted device  
5 being at least partially permeable to tissue-culture medium.

8. The method of claim 1, wherein the multi-layered stack of living tissue in step (a) is formed by rolling a sheet of living tissue on a tubular support.

9. The method of claim 8, wherein said force-applying  
10 means in step (b) comprises a tissue-culture medium permeable elastic sleeve.

10. The method of any one of claims 1 to 9, wherein said at least one sheet of living tissue is a biopsy.

11. The method of any one of claims 1 to 10, wherein said  
15 at least one sheet of living tissue is obtained by culturing cells in vitro.

12. The method of claim 11, wherein said cells are selected from the group consisting of embryonic stem cells, post-natal stem cells, adult stem cells, mesenchymal cells, hepatocytes, Islet  
20 cells, parenchymal cells, osteoblasts and other cells forming bone or cartilage, and nerve cells.

13. The method of claim 12, wherein said mesenchymal cells are selected from the group consisting of fibroblasts, interstitial cells, endothelial cells, smooth muscle cells,  
25 skeletal muscle cells, myocytes, chondrocytes, adipocytes, fibrocytes, and ectodermal cells.

14. The method of any one of claims 1 to 10, wherein said at least one sheet of living tissue is selected from the group consisting of a skin tissue, a corneal tissue, a cardiac valve  
30 tissue, a connective tissue and a mesenchymal tissue.

15. A multi-layer tissue made according to the method of any one of claim 1 to 14, wherein said multi-layer tissue comprises at least two different types of sheets of living tissue.

16. A multi-layer tissue according to claim 15, consisting essentially of between two sheets and twelve sheets of living tissue.

17. A multi-layer tissue according to claim 15, consisting essentially of between three sheets and nine sheets of living tissue.

18. A multi-layer tissue according to any one of claims 15 to 17, wherein said tissue has a thickness of about 0.01 mm to about 0.5 mm.

19. A multi-layer tissue according to claim 18, wherein said tissue has a thickness of about 0.03 mm to about 0.45 mm.

20. A method for preparing a planar human or animal tissue suitable for use in making a multi-layer tissue construct from at least one sheet of living tissue, the method comprising the steps of:

(a) arranging said at least one sheet of living tissue on a substantially flat support surface; and

(b) anchoring said at least one sheet of living tissue to the support surface with an adjustable anchor-means comprised of a multiplicity of spaced apart anchors, wherein the anchors are suitable for (1) applying sufficient tension across the sheet of living tissue to prevent shrinkage and/or maintain cellular differentiation and/or induce orientation of cells in said at least one sheet of living tissue and (2) allowing contraction of said at least one sheet of living tissue once a predetermined threshold of tension is exceeded across the sheet of living tissue.

21. The method of claim 20, wherein the anchors are discrete moveable weights or ingots.

22. The method of claim 20 or 21, wherein said at least one sheet of living tissue comprises two or more superimposed sheets of living tissue.

23. The method of any one of claims 20 to 22, wherein said  
5 at least one sheet of living tissue is folded upon itself.

24. The method of any one of claims 20 to 23, wherein said at least one sheet of living tissue is obtained by culturing cells *in vitro*.

25. A multi-layer tissue consisting essentially of between  
10 two and twelve sheets of living tissue, made according to the method of any one of claims 20 to 24.